ABSTRACT

Methods for the isolation and identification of a toxicant in a sample are disclosed. Luminescent biological agents (i.e., bacteria) having sensitivity to a toxicant or an isolatable component in a sample are used to provide visually discernable zones of luminescent inhibition in the presence of a toxicant (or) in the presence of an isolatable sample component as separated by paper or thin layer chromatography. Kits for use in conjunction with the identification of a toxicant in a sample are also described, which include a luminescent biological reagent as the visualizing agent. Particular examples of luminescent bacterial agents useful in the practice of the present invention include *photobacterium leoganthi, photobacterium phosphoreum, Vibrio fischeri, Vibrio harveyi* a luminescent fungi, a luminescent fish extract, a luminescent dinoflagellate and fluorescent microorganisms, such as *Cypridina*. Potential toxicants in a liquid sample, a solid sample, or in a gaseous sample may be identified and further chemically characterized using the described methods. The isolation of potential toxicants in a sample through the processing of a sample through a separation phase matrix such as chromatography paper or TLC plate, followed by exposure to luminescent biological agent, provides for a rapid and inexpensive method for identifying pesticides, herbicides and heavy metals in a known or unknown sample.